Wisconsin Urban & Community Forests

A Quarterly Newsletter of the Wisconsin Department of Natural Resources, Forestry Division

The Rundown on Urban Forest Assessment

by Ian Brown, Urban Forestry Assessment Specialist
DNR Division of Forestry

What Is Assessment?

Effective management of any resource requires an understanding of what you have. The urban forest is no exception—effective management requires an inventory-based assessment of that resource. Urban forest assessment is the quantification of trees within urban areas. By defining the resource, an assessment provides the building blocks for an urban forest management plan. Rather than a blind, shot-in-the-dark approach to management, assessments deliver hard numbers to stand behind. By defining the current resource, assessments can guide maintenance schedules or canopy goals. A current emphasis in assessment projects is on identifying ash in preparation for the possible arrival of emerald ash borer.

Why Conduct an Assessment?

No matter the size or location of a community, an urban forest assessment is a very useful management tool. Assessments are commonly performed to plan and prioritize specific tree maintenance tasks. But depending on the particular method, urban forest assessments can also provide information relevant not just to forestry but to other departments and programs as well. Some assessment models estimate the dollar value of the environmental benefits of inventoried trees based on attributes such as species, size and location. Benefits include carbon sequestration, air pollution removal, reduced storm water runoff and reduced consumption of energy to heat and cool buildings. These data make it easy to illustrate the infrastructure benefits of urban trees and the significant impact of trees on community wellbeing. For example, a canopy survey can quantify tree cover to address both forestry and storm water management issues. Overland water flow can be estimated and modeled depending on ground cover (trees vs. pavement) and typical rainfall events. The models can thereby pinpoint the storm water treatment savings of green infrastructure.

Photo: Tree Trust

Volunteers collect street tree data for an inventory.

It's no secret that assessments take time and money, so if a community seems to be operating just fine without one, why should they do one now? Although goals may vary for urban forest enhancement and community growth, tree data assessment is vitally important for any community seeking improved efficiency and less crisis management. Assessments pay for themselves.

Different Types of Assessment

Assessments can be based on on-the-ground inventories or remotely sensed tree canopy analysis. These two approaches are not mutually exclusive and ideally a community would have both types of data linked within spatial software (such as GIS) to provide a comprehensive view of the urban forest. Some assessment methods are more comprehensive than others, and

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Photo: State of Wisconsin

Representative Mary Williams observes as Governor Jim Doyle signs Assembly Bill 36. (See article on page 7.)

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Inside this issue:

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Community Profile:

Tree City USA: 20 years

Growth Awards: 2

Population: 3873

Number Street Trees: Approximately 1500

Trees on City Property: Approximately 500

Miles of Street: 25

Number of Parks: 8

Program Profile:

Tree Board: Ted Pyrek, chair plus 5 members

Staff: 6 Department of Public Works

Equipment: Chipper, trucks, chain and hand saws

Budget: $18,000/yr

Community Profile:

City of Horicon

How One Person Made a Difference

by Peter Zirbel

Judy Zirbel's 25-year involvement with street trees in the city of Horicon began simply enough. She wanted to plant a tree in the city-owned terrace between the sidewalk and street in front of her home. She stopped by city hall to see what regulations applied and was surprised to find out there was an ordinance prohibiting the planting of new street trees. When she asked about the reasoning behind the ordinance she was told, "Street trees create problems with overhead and underground utilities. Their roots crack and heave sidewalks. They just create more work and bother for the city to deal with."

A housewife trained as a nurse, Judy was not an expert on street trees. But she had a firm belief that trees made the city a more pleasant place to live. All you had to do was compare the shaded streets in the older parts of town with the barren-looking, wide, asphalt streets around her house. It just seemed shortsighted and unfair to deprive current and future residents of the benefits that street trees could provide.

When the family traveled to other areas in Wisconsin, Judy would look at their street trees. She noted that some other communities allowed planting of street trees. She contacted some of those communities and asked about their planting ordinances. Some of her contacts directed her to cities throughout the country who were leaders in this area, and they were happy to provide her with copies of their ordinances and other information.

Photo: Peter Zirbel

Judy and Dick Zirbel plant the first street tree following adoption of a new ordinance (1982) permitting tree planting on city owned terraces.

Judy picked up brochures in the UW–Extension urban forestry series and also studied Wisconsin DNR publications. What she read convinced her that the city's concerns about street trees could be addressed with the right species of trees planted in the right locations.

She asked to address the city council about changing the ordinance to allow the planting of street trees. She was nervous about speaking in public and spent many hours preparing her talk and practicing it in front of her family. Her talk focused on how trees benefit communities and how other communities' ordinances could be used as a guide for a new ordinance that allowed street trees.

Her presentation was heartfelt, and it was obvious that she had done her homework. The city council agreed to consider changing the ordinance, provided that she draft the new ordinance and work to implement it as a member of the park board.

In the spring of 1982, after the ordinance change, Judy and her husband planted the first street tree in front of their house on Minerva Street. She then turned her attention to planting street trees in

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Send your inquiries, address changes, or story ideas to Dick Rideout, **Richard.Rideout@Wisconsin.gov** (608-267-0843) or Laura Wyatt, Laura.Wyatt@Wisconsin.gov (608-267-0568).

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Articles, news items, photos and ideas are welcome.

This newsletter is available in alternative format upon request and can also be downloaded in PDF format from our Web site: http://dnr.wi.gov/org/land/forestry/UF/

For breaking UF news, anecdotes, announcements and networking opportunities, sign up for The Urban Forestry Insider, DNR's twice-monthly e-newsletter. Archives are at http://dnr.wi.gov/org/land/forestry/UF/resources/InsiderArchive.html

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Wisconsin Celebrates Arbor Day


New Richmond

1st Place Arbor Day Poster
Winner, Jade Lavalier


Amherst


Little Chute


Grand Chute


New Berlin


Cudahy


Delavan


Blue Mound


Whitewater


Fitchburg-Madison


West Allis

Photo: WDNR

Students, teachers and dignitaries celebrate Arbor Day at the 2007 statewide special achievement ceremony. *This special ceremony in celebration of the 135th anniversary of Arbor Day and the 124th years of its celebration by Wisconsin schoolchildren, honors the top three state winners of the fourth grade Forest Appreciation Week Writing and the fifth grade Arbor Day Poster contests. From left to right (first row): first place poster, Jade Lavalier, Halmstad Elementary; second place poster, Alyssa Mianecki, Converse Elementary; third place poster, Brooke Daven, John Edwards Middle School; third place writing, Jack G. Joel Berg, Columbus Elementary; first place writing, Caitlyn Kozik, Greenwood Elementary and CynArah Cousins, second place writing, Royce Elementary. Teachers and friends (second row): Eugene M. Roark, Wisconsin Woodland Owners Association; Mark Freberg, Wisconsin Arborist Association; Sarah Schmidt of Halmstad Elementary; Kathy Swingen, Wisconsin Nursery Association; Sterling Strathe, Learning, Experiences & Activities in Forestry (LEAF) program; Deputy Secretary Mary Schlaefer, WDNR; Karen Moore of Columbus Elementary; Diane Opelt of Greenwood Elementary; Mrs. Joan Michels of Royce Elementary; Chief State Forester Paul DeLong, WDNR. To view and read award winning posters and essays and learn how to be involved next year, visit EEK! Environmental Education for Kids at* http://dnr.wi.gov/org/caer/ce/eek/cool/index.htm.

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Project Profile:

Leading by Example Gets Buckthorn out of DNR Exhibit at State Fair Park

by Toby Silverman, Forestry Assistant
DNR Southeast Region
and
Mike Bates, Urban Forestry Assistant
DNR Southeast Region

There's an old saying, *actions speak louder than words*. That, coupled with the need to lead by example in invasive species control, brought a number of Department of Natural Resources staff to State Fair Park the last week in March, and they weren't there for cream puffs.

For many fairgoers, the DNR exhibit area is a quiet, wooded refuge from the hustle and bustle of the rest of the fair. One might assume that the area exemplifies a pristine, native Wisconsin forest. Unfortunately this was not the case. Like many urban parks and natural areas, the DNR exhibit area had been invaded by non-native species, primarily common buckthorn.

DNR promotes invasive species control and eradication, so staff decided it was time to "put their money where their mouth was" and rid the agency's own exhibit area of its non-native invaders. It was decided that buckthorn removal would be a good first step toward an invasive-free exhibit area. Non-native honeysuckle is also present in the area and will be removed in the future, but staff felt that removing both the buckthorn and honeysuckle at the same time would be too drastic.

The project spanned several days during the week of March 26, 2007. Staff began by cutting the buckthorn down to ground level with a brush saw. Cut stumps were then treated with Garlon® 4 herbicide mixture to prevent the remaining live tissue from re-sprouting. Staff ran the brush through a wood chipper to reduce the cut buckthorn to mulch-sized pieces. The mulch was then spread in sections of the exhibit area for soil improvement. DNR Southeast Region forestry and urban forestry staff who participated in the removal included project leader Mike Sieger, Joe Lennart, Chris Martin, Randy Cooper, Julie Peltier, Kim Sebastian, Jeff Weatherly and Toby Silverman, along with Parks and Recreation Program Manager Greg Pilarski and Forestry Invasive Plants Coordinator Tom Boos. Although inclement weather threatened to delay the project, the work was started earlier than anticipated and was completed in a timely *and safe* fashion; the crew utilized required safety equipment, clothing and procedures.

Photo: Frank Trcka, WDNR

Forester Randy Cooper plants a tree in the DNR exhibit area.

The second stage of the project involved replanting portions of the exhibit area where the buckthorn was removed. This was accomplished with 24 park-grade trees as well as 20 shrubs from DNR nurseries. Species included white spruce, white pine, hemlock, red oak, white oak, basswood, river birch, and hazelnut and ninebark shrubs. Planting was completed at the end of April by DNR staff Mike Sieger, Randy Cooper, Chris Martin and Matt Freer. One section of the exhibit where buckthorn was removed will become a prairie restoration demonstration area. This area will be replanted with herbaceous native prairie species rather than trees or shrubs.

Replanting does not signify the end of the project though. The exhibit area must be monitored for buckthorn stump re-sprouts as well as new buckthorn seedlings germinating from seeds in the ground. After being well established in the exhibit area, buckthorn berries dropping to the ground have created a large seed bank in the soil. As these seeds germinate and grow, they will need to be pulled or treated with herbicide. Seeds can also be transported to the exhibit area by animal visitors, especially birds, as well as human visitors.

Foresters Mike Sieger and Joe Lennart returned to the exhibit area in early May to follow-up spray any remaining buckthorn. They searched for new buckthorn seedlings that had germinated since April, as well as any seedlings that had been missed during the first removal or were too small to be cut by the brush saw. They applied Garlon® 3A foliar herbicide to the leaves of these seedlings. Mike Sieger noted that the first removal effort was a success because there were no stump re-sprouts. He plans to return to the exhibit area at least two more times this year to treat any new buckthorn seedlings.

DNR staff hope for a favorable response from this year's fairgoers when they get a chance to see the positive change this buckthorn removal work and replanting brings to the aesthetics of the exhibit.

Photo: Jeff Roe, WDNR

New Glarus 2007 Arbor Day tree planting crew composed of high school volunteers and adult leaders

Recognizing Community Forestry

by Ian Brown, Urban Forest Assessment Specialist
DNR Division of Forestry

Wisconsin is once again a national leader in communities receiving Tree City USA recognition. In 2006, Wisconsin ranked third nationally with 169 Tree City USA communities. The group includes 10 new Tree Cities and 20 recertifying Tree Cities that received a Growth Award for going above and beyond the Tree City USA program standards.

To be recognized as a Tree City USA, a community must meet four requirements. It must have 1) a designated tree board or forestry department, 2) an annual forestry program expenditure of at least $2 per capita, 3) a tree ordinance and 4) observe and proclaim Arbor Day.

Twelve utilities with Wisconsin service areas received Tree Line USA recognition in 2006. To be recognized as a Tree Line USA, a utility must meet three requirements. It must 1) provide quality tree care that follows national tree care and protection standards, 2) provide annual worker training and 3) sponsor ongoing tree planting and public education.

The Tree City USA and Tree Line USA programs, sponsored by the National Arbor Day Foundation and administered in Wisconsin by the DNR, provide communities and utilities with a tangible goal and national recognition for their community forestry efforts.

Congratulations to Wisconsin's 2006 Tree City USA recipients:

- *2006 Growth Award Recipient
- New Tree Cities are shown in **BOLD**

Adams
Albany
Algoma*
Allouez
Amherst
Antigo
Appleton*
Ashland
Ashwaubenon
Baraboo
Bayfield*
Beaver Dam
Bellevue
Beloit
Bloomer
Blue Mounds
Brillion
Brookfield
Brown Deer
Campbellsport
Cedarburg
Chenequa
Chilton*
Chippewa Falls
Clinton*
Clintonville
Combined Locks
Cottage Grove
Cudahy
De Pere
DeForest
Delafield
Delavan
Denmark
Dodgeville
Dresser
Eau Claire
Edgar
Elkhart Lake
Elkhorn
Elm Grove
Evansville
Fitchburg*
Fond du Lac
Fontana
Fort Atkinson*
Fort McCoy
Fox Point
Franklin
Fredonia
Fremont
Germantown
Gilman
Glendale
Grafton
Grand Chute, Town (Outagamie)
Green Bay
Green Lake
Greendale
Greenfield*
Greenville, Town (Outagamie)*
Hales Corners
Hartford
Hillsboro
Hobart
Horicon
Howard
Jackson
Janesville*
Jefferson
Johnson Creek
Kaukauna
Kenosha
Kewaunee
Kimberly
La Crosse
Lake Geneva
Lake Mills
Lawrence, Town (Brown)
Little Chute*
Lodi
Madison, City*
Madison, Town (Dane)
Manitowoc
Maple Bluff
Marinette*
Marion
Marshall
Marshfield
Mayville
Medford
Menasha
Menasha, Town (Winnebago)
Menomonee Falls
Menomonie
Mequon
Merrill
Middleton
Milwaukee
Mineral Point
Monona
Monroe
Monticello
Mount Horeb
Muskego
Neenah
New Berlin
New Glarus
New Holstein
New London*
North Fond du Lac
Oak Creek*
Oakfield
Oconomowoc
Oconto
Onalaska
Oshkosh
Paddock Lake
Phillips
Plover
Plymouth
Port Washington
Portage
Pound
Rice Lake
Richland Center*
Ripon
Rosendale
Rothschild
Saukville
Shawano
Sheboygan
Sherwood
Shorewood
Shorewood Hills
Sparta
Spooner
Stevens Point*
Stoughton*
Sturgeon Bay
Sun Prairie
Superior
Theresa
Thorp
Tomahawk
Turtle Lake
Two Rivers
Valders
Verona
Washburn
Waterford, Town (Racine)
Waterford, Village
Waterloo
Watertown
Waukesha
Waunakee
Waupaca
Waupun
Wausau
Wautoma
Wauwatosa
Wescott, Town (Shawano)
West Allis
West Bend*
Weyauwega
Whitefish Bay
Whitewater*
Whiting
Williams Bay
Wisconsin Rapids

To learn how your community can become a Tree City USA, contact your DNR regional urban forestry coordinator (refer to contact information on the back cover of the newsletter) or visit the DNR Web site at http://www.dnr.state.wi.us/org/land/forestry/UF/awareness/.

Congratulations to Wisconsin's 2006 Tree Line USA recipients:

Alliant Energy
East Central Energy
Hartford Electric
Madison Gas and Electric
Pierce Pepin Cooperative Services
Richland Electric Cooperative
Shawano Municipal Utilities
Stoughton Municipal Utilities
Vernon Electric Cooperative
WE Energies
Wisconsin Public Service Corporation
Xcel Energy

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Community Tree Profile:

European Beech (Fagus sylvatica)

by Laura G. Jull, Professor
Dept. of Horticulture, University of Wisconsin–Madison

Photo: Laura Jull, Professor, UW–Madison

European Beech

Native To: Central and southern Europe

Mature Height: 50–75'

Spread: 40–60'

Form: Pyramidal to oval, becoming rounded with age; symmetrical; horizontal branching; branches low to the ground; medium texture; shallow root system.

Growth Rate: Slow to moderate

Foliage: Alternate, simple, oblong to ovate-elliptic, 2–4" long; wavy margins, blunt tip, rounded leaf base, 5–10 pairs of pinnate veins, glabrous; silky, white hairs on leaves when unfolding; petioles may be pubescent; similar in leaf to American beech, *Fagus grandifolia*, but European beech leaves have fewer paired, pinnate veins and wavy margins versus serrated margins and 9–15 pairs of pinnate veins for American beech. Both beeches tend to retain their juvenile leaves near the lower, inner part of the tree into winter. Purple-leaved cultivars of European beech are more commonly sold than the straight species with green leaves.

Buds and Stems: Alternate; buds are distinctly long, thin, conical, imbricate, and sharply pointed, resembling a miniature cigar. Stems are glabrous, slender, olive-brown to brown, with buds in a zigzag arrangement up the stem.

Fall Color: Late, yellow to russet-brown; fair but can be good in some years

Flowers: Not showy, monoecious, greenish-yellow in early spring; male flowers are in rounded heads and female flowers are in 2- to 4-parted spikes.

Fruit: Light brown, triangular, 3-sided, edible nut is enclosed in a hard, woody, 4-parted, ¾- to 1"-long, prickly involucre bract that splits open at the base releasing 2-4 nuts per bract. Fruit occurs from late summer to fall and is highly prized by birds and mammals.

Photo: Edward Hasselkus, Professor Emeritus, UW–Madison

European Beech foliage and fruits

Bark: Smooth, gray; resembles an elephant's hide; bark remains smooth even into old age, thin bark is easily damaged by mechanical injury.

Site Requirements: Full sun to partial shade; prefers a rich, loamy, slightly acid soil but is pH adaptable; moist, well-drained soil; intolerant to wet soil, soil compaction, drought and road salt; difficult to transplant, plant in spring; not invasive. Does tolerate slightly higher pH than native American beech.

Hardiness Zone: 5a

Insect & Disease Problems: Woolly aphids, leaf scorch during drought, root rot, Nectria canker, beech scale, heart rot and chestnut borers

Suggested Applications: European beech and its cultivars are nice specimen shade trees for lawns and parks. Not suited for use as a street tree due to intolerance to drought & poor soils, low branch habit and space requirements. In Europe, purple-leaved cultivars of European beech are often trained when young to grow into a dense hedge or are espaliered to grow against a wall.

Limitations: Difficult to transplant; best to dig and plant in spring. Intolerant to urban conditions and casts dense shade, hence is hard to grow grass beneath. Can form included bark and narrow crotch angles; "bleeds" sap profusely after pruning in spring, however this is only cosmetic and will not harm the tree.

Comments: European beech's attractive form, branch pattern, smooth, gray bark, and edible nuts make this tree a good choice for large areas, parks, lawns and golf courses. There are many cultivars to choose from, which include bronze-leaved, purple-leaved, weeping, weeping and purple-leaved, gold-leaved, variegated, cutleaved, crinkle-leaved, columnar to upright, dwarf and contorted forms, all of which make very beautiful specimen trees in the landscape and are highly prized.

Common Cultivars or Selections:

'Asplenifolia': wonderful, lacy, cutleaf form creates a fine texture; very beautiful; confused in the trade and often called 'Laciniata' or 'Heterophylla'

'Atropunicea': copper beech; dark purple leaves in spring, changing to dark purplish green in summer, bronzy green fall color; same plant as *F. purpurea*

'Aurea Pendula': weeping form; yellow leaves turn greenish in summer; needs partial shade as leaves can scorch in hot, dry weather; 30' tall

'Cristata': upright, narrow form; crinkled, green, cockscomb-like leaves; 35' tall

‘Dawyck’ (‘Dawyckii’ or ‘Fastigiata’): columnar form, 50’+ tall and only 12’ wide; green leaves

‘Dawyck Gold’: narrow form; bright golden leaves tolerate full sun, fades to bright green later in summer

‘Dawyck Purple’: upright, columnar form but with purple leaves; broader and not as dense as ‘Dawyck’

F. laciniata: cutleaf form, deeply toothed leaves, not as deep as ‘Asplenifolia’

F. pendula: beautiful weeping form, grown mainly as a specimen; 50’ tall; green leaves

F. purpurea: dark purple leaves; common; same plant as ‘Atropunicea’ and ‘Cuprea’

‘Purple Fountain’: narrow; upright leader; weeping form; purple leaves

‘Purpurea Pendula’: dark purple leaves; stout, weeping branches with mop-like form; not tall and slender as ‘Purple Fountain’; 5–15’ tall

‘Riversii’: coppery, deep purple leaves; slower growing; similar to *F. purpurea*; holds color better in summer; common

‘Rohan Gold’: yellow, dissected leaves turn light green in summer

‘Rohan Obelisk’: compact, narrow pyramidal to columnar form; dark purple, dissected leaves; also known as ‘Red Obelisk’

‘Rohanii’: vigorous; reddish purple leaves when they emerge in spring, then brownish purple leaves in summer; leaf margins are wavy and more deeply lobed than the straight species; leaves resemble an oak leaf; crisped leaf margins with kinky hairs on the leaf edges which are visible early in the season

‘Roseomarginata’: leaves are variegated with rosy-pink margins with a purple-green center; needs partial shade as leaves can scorch in hot, dry weather; 30’ tall; also known as ‘Purpurea Tricolor’; purple color can fade to bronzy green in summer

‘Rotundifolia’: dark green, round leaves closely set on branches; dense, stout form; pyramidal to oval; 1” rounded leaves are very small for a beech, with only 2-4 pairs of veins

‘Spaethiana’: vigorous, upright form; shiny, smaller, dark purple leaves hold color well into summer

‘Tricolor’: similar to ‘Roseomarginata’ except that leaves are variegated with cream and rosy-pink margins with a purple-green center; needs partial shade as leaves scorch in hot, dry weather; 30’ tall

F. tortuosa: wide-spreading, stout, twisted, slightly pendulous branches; green leaves; dwarf form; 20’+ tall

‘Zlatia’: wide, upright; yellow leaves turn light green in summer; 50’ tall.

Governor Doyle Signs Bill into Law

Assembly Bill 36 which allows the DNR to expedite urban forestry grants to communities following catastrophic storm damage in an urban area for which the governor has declared a state of emergency was signed into law by Governor Doyle on May 30, 2007. It is now 2007 Wisconsin Act 13. Governor Doyle thanked representatives Mary Williams and Barbara Gronemus, as well as Senator Robert Wirch, for their work on the bill. The DNR will now begin the process of promulgating administrative rules to administer the grants. This includes drafting the language, taking it to public hearing for input, revising the rules considering the public input, gaining approval from the Natural Resources Board and finally gaining approval by the Assembly Committee on Homeland Security and State Preparedness, and the Senate Committee on the Environment and Natural Resources.

What Damaged This Tree?

Photo: WDNR file photo

Turn to page 10 to find out…
Hint—Shown is the southwest side of a red maple trunk.

Do you have pictures of tree damage others ought to know about? Send them to Kim Sebastian (address on page 16) and we’ll print them here!

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Urban Tree Health Matters:

Five Trees and Shrubs I Love to Hate

by Brian D. Hudelson, Director
UW–Madison Plant Disease Diagnostics Clinic

'Tis the season for many homeowners to start thinking about adding new trees and shrubs to their home landscapes. So for this issue of the *Wisconsin Urban & Community Forests* newsletter, I decided to provide a completely unbiased (OK, so it's really a completely biased) view of five trees and shrubs to be cautious about when selecting landscape plants for your home.

Colorado blue spruce: I was once quoted in a northern Wisconsin newspaper calling Colorado blue spruce "a dog of a tree," and I can't say that my opinion has changed much since that time. Don't get me wrong. I actually love healthy Colorado blue spruce trees. Their bluish color and oftentimes classic Christmas tree form can be incredibly attractive. Unfortunately I rarely—or more accurately, never—see healthy Colorado blue spruces. These trees are native to higher elevations of the Rocky Mountains where the air is relatively dry. In wetter, muggier Wisconsin weather, excessive moisture tends to be trapped in the interior canopy of the trees and provides a perfect environment for the development of a myriad of fungal diseases. In particular, Rhizosphaera needle cast leads to interior needle loss to the point where lower branches have no aesthetic value. Canker diseases such as Cytospora lead to the girdling and death of branches and sometimes even main trunks. If a homeowner insists on planting a Colorado blue spruce, and often they do, then I suggest planting a single specimen with no other trees or shrubs nearby, and I typically recommend using a smaller, dwarf variety. The idea is to remove obstacles to air flow around the tree and choose a variety where air can better penetrate the canopy, thus reducing canopy moisture and providing a less favorable environment for diseases to develop. As an alternative, if you have a well-drained site, consider white fir, a tree with color similar to that of a Colorado blue spruce, but with fewer, in my experience, overall disease problems.

Austrian pine: As with Colorado blue spruce, I really do love Austrian pine. I have always felt that this tree has a rugged look that I find attractive, and the tree has been used extensively in urban landscapes because of its tolerance to salt. Unfortunately, Austrian pine is quite intolerant of diseases, particularly Dothistroma needle blight and Diplodia shoot blight and canker (formerly Sphaeropsis shoot blight and canker). Dothistroma needle blight is the less aggressive of the two diseases, causing needle tip browning and less frequently needle death. Diplodia shoot blight is a much more serious disease, leading to branch tip death. If infections occur farther back on branches or on the main trunk of a tree, girdling of the branch or trunk can occur, leading to massive dieback or even death of a tree. Massive sap exudation at the point of infection is often a clue that Diplodia shoot blight and canker is a problem. Because Diplodia shoot blight is so common and destructive on Austrian pines, I avoid recommending this tree and tend to suggest Norway spruce or Korean pine as alternatives, assuming the site is well drained and relatively salt free.

Ash: Green ash has always been my vote for world's ugliest tree and for that reason alone, I don't recommend it to homeowners. White ash on the other hand, particularly 'Autumn Purple', can be very attractive, but with potential problems such as emerald ash borer, ash flower gall mite, anthracnose and Verticillium wilt, even white ash is not a good choice any longer. Emerald ash borer is the insect that was first detected in the Detroit area killing ash trees left and right. It has now been documented not only in Michigan, but also in Ohio, Indiana and northern Illinois. While not yet detected in Wisconsin, it is likely only a matter of time before emerald ash borer arrives in the state and starts wreaking havoc with the state's ash population. Ash flower gall mite

Photo: A Steven Munson, USDA Forest Service

Ash flower gall mite damage on ash

Coming Events

July 28–August 1, 2007—*International Society of Arboriculture Annual Conference & Trade Show,* Honolulu, HI. Contact ISA, www.isa-arbor.com/conference/.

August 18, 2007—*Wisconsin Arborist Association Tree Climbing Championship*, location TBA. Now separate from the WAA summer workshop, this year's championship will include a program for the public. Contact Cory Gritzmacher, cagritz@netwurx.net.

September 12, 2007—*Wisconsin Urban Forestry Council quarterly meeting*, Madison, WI. Contact Laura Wyatt, 608-267-0568 or laura.wyatt@wi.gov.

September 15–19, 2007—*Society of Municipal Arborists Annual Conference*, Hollywood Beach Marriott Resort & Spa, Hollywood, FL. Contact www.urban-forestry.com.

is a cosmetic problem, but causes male ash flowers to morph into a mass that one of my clients described as "like wads of used chewing tobacco hanging from the tree." Quite attractive! Anthracnose is also a cosmetic problem, but the disease can cause substantial browning and distortion of leaves that can make ash trees very unattractive in the late spring and early summer. Finally, Verticillium wilt is a vascular wilt disease where the pathogen invades the water-conducting tissue (i.e., xylem) within the tree and blocks water movement, leading to wilting and eventual tree death. What should a homeowner select as an alternative to ash? With all of ash's problems, virtually anything, deciduous or not, would likely be an improvement.

Junipers: I have never liked gardening with plants that hurt me, and for that reason alone I am not fond of junipers, or roses for that matter. My dislike of junipers has also been bolstered by the fact that when I was landscaping the yard of my first home 15 years ago, I planted a row of columnar junipers as a visual barrier, only to watch them decline over the years. Eventually I ended up with a row of 15-foot junipers where the bottom 13 feet of growth was completely dead. The culprit: Phomopsis tip blight, a common fungal disease of junipers. Making junipers even less aesthetically appealing is the predilection of landscapers to use them around the base of hawthorns or crabapples, often leading to severe cases of the cedar-apple rust diseases. These fungal diseases are caused by several species of the genus *Gymnosporangium* and these fungi require both junipers, particularly redcedar, and woody rosaceous trees and shrubs, including apple, crabapple, quince and hawthorn, to complete their life cycles. On junipers these fungi infect branches, leading to symptoms that range from branch swelling and roughening to one- to two-inch-diameter galls. In late spring/early summer, these areas begin oozing masses of orange spores that can be quite disturbing to the average homeowner. Some of these masses can grow to the size of softballs. On woody rosaceous hosts, symptoms can include bright yellow or orange leaf spots on most hosts, spiny salmon-colored fruits (most commonly on hawthorn) or spongy-looking tissue infections on branches that often lead to branch tip dieback (again most commonly on hawthorn). My best suggestion for avoiding the cedar-apple rusts and Phomopsis tip blight is to simply not grow junipers. For hard-core juniper connoisseurs, growing more disease-resistant varieties such as Chinese junipers, *Juniperus chinensis,* can be an option.

Photo: Linda Williams, WDNR

Cedar apple rust gall on juniper

Crabapple: At their best, crabapples provide a stunning show of spring flowers, a modicum of summer color (particularly if trees have purple-tinted foliage), and winter interest in terms of colorful fruit that are aesthetically appealing to humans and gastronomically appealing to birds. At their worst, crabapples are Halloween nightmares that defoliate by mid-summer, leaving a tree that is more suited for a horror film than a showcase garden. Proper crabapple variety selection is key to having a good experience with a crabapple tree. Always select a variety with high levels of resistance to apple scab, the disease that causes massive defoliation. Good variety selection, in combination with good fall clean-up and destruction of crabapple leaf litter, can usually keep this disease at bay. Also be sure to select a crabapple variety that has resistance to fire blight. This bacterial disease infects branches, typically through flowers (the bacterium is often dropped off by pollinating honeybees), and causes branch dieback. If the bacterium reaches the main trunk, it can kill a tree. For a list of suggested crabapple varieties check out the University of Wisconsin Garden Facts fact sheet, *Top Ornamental Crabapples for Wisconsin*, www.uwex.edu/ces/wihort/gardenfacts/XHT1012.pdf.

University of Wisconsin Garden Facts, including the fact sheet on crabapple varieties, and fact sheets on most of the diseases and insect pests discussed in this article, are available through your local county UW–Extension office and are also available free to the public at www.uwex.edu/ces/wihort/gardenfacts.html.

October 25, 2007—*Wisconsin Arborist Association Fall Seminar*, Wilderness Resort, Wisconsin Dells, WI. Contact Cory Gritzmacher, cagritz@netwurx.net.

November 8–10, 2007—*TCI Expo*, Connecticut Convention Center, Hartford, CT. Contact Tree Care Industry Association, www.natlarb.com/.

November 14–15, 2007—*Partners in Community Forestry National Conference*, Baltimore, MD. Contact National Arbor Day Foundation, www.arborday.org/shopping/conferences/.

December 5, 2007 2007—*Wisconsin Urban Forestry Council quarterly meeting*, Madison, WI. Contact Laura Wyatt, 608-267-0568 or laura.wyatt@wi.gov.

February 3–5, 2008—*Annual Wisconsin Urban Forestry Conference and Wisconsin Arborist Association Conference and Trade Show*, Middleton, WI. Contact Cory Gritzmacher, cagritz@netwurx.net.

If there is a meeting, conference, workshop or other event you would like listed here, please contact Dick Rideout at 608-267-0843 with the information.

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Urban Forest Insect Pests:

Pin Oak Kermes Scale

by Linda Williams, Forest Health Specialist
DNR Northeast Region

Pin oak kermes scale, *Allokermes galliformis*, is a native scale insect that attacks the shoots of young red oaks. Mature red oaks will occasionally be infested. These scales suck plant juice from the twigs and stems causing the twigs to dry up and wilt. The shoots often die at the point where the scales are feeding, or branches are weakened at that point and may break off later. This damage to the tree can cause dieback and loss of vigor if the tree is heavily or repeatedly infested.

Female kermes scales are immobile. They grow to the size of a marble and resemble twig galls. They are often called gall-like scale insects. Male kermes scales don't look like a scale at all but instead resemble a tiny fly. Males fly to the female scales and mate. The female, which is enclosed in the round, gall-like shell, lays up to 2000 eggs within her shell and then dies, leaving the hard protective shell to protect her eggs. Eggs hatch in September. The tiny, newly hatched scales are mobile and are called crawlers. The crawlers leave the protective shell of the female and spend the winter in cracks in the bark. The next spring the crawlers migrate to a branch union or to the twig tip near the buds. They insert their mouthparts, begin feeding and begin to grow their hard protective shell. They feed throughout the summer and repeat the life cycle.

Photo: Linda Williams, WDNR

Kermes scales look like round galls attached to the twig of red oaks.

Direct control of the kermes scale is seldom necessary partly because it rarely causes mortality in a tree, but also because of the presence of natural enemies, including parasitic wasps, ladybugs and lacewings, which help keep the scale population in check. If you just can't stand seeing the globular scales on your young tree and you have a small infestation, you can pick the woody scales off the twigs before the eggs hatch in August or September. Dispose of the scales in the garbage. You could also treat with a dormant oil in the spring or early summer when the crawlers are moving around. If you have a larger, more widespread infestation, a contact insecticide can be applied in the spring when the crawlers are moving to the shoots.

Most young red oaks suffer only minor damage. As the trees grow larger, they become less susceptible to attack and the scales are found less frequently in mature trees. In Wisconsin, the majority of kermes infestations have occurred in the southern half of the state.

What Damaged This Tree?

Photo: WDNR file photo

Answer: When occurring on the southwest side of the trunk, such damage is often called sunscald. Sunscald is commonly attributed to rapid temperature change at the trunk surface when the sun either sets or goes behind clouds on a sunny winter day. However, sunscald is more complex than cambial death from sudden temperature fluctuation. Post-transplanting moisture stress has been strongly implicated as a predisposing factor (Miller and Roppolo 2001). Subsequent invasion of stressed trees by wood boring insects and disease cankers can produce additional "sunscald" symptoms.

Look closely at the bottom left side of the canker in this photo and you will see an apparent pre-existing wound, very likely the initial injury to this tree. Though temperature fluctuation or moisture stress may have been factors in symptom development, the "sunscald" is actually callus formation and longitudinal cracks resulting from the initial injury.

Council News:

Raising Our Voices

by Ken Ottman, Chair
Wisconsin Urban Forestry Council

Last year the Wisconsin Urban Forestry Council, working along with DNR urban forestry staff and the DNR Forestry Leadership Team, identified three key urban forestry work plan issues. One of these major issues was that of *advocacy and program support.* Since then, council members have been actively working with people across the state to increase the voice of the urban forestry community. I applaud their recent efforts and their initial results.

The benefits of trees and the value of sound tree management are concepts that are often unappreciated and/or misunderstood. Therefore, we function in an environment where federal, state and local urban forestry programs are, for the most part, under-funded and under-staffed. The most recent funding ***wake-up call*** arrived when the president's budget for FY2008 called for a **38 percent reduction in funding for the Urban & Community Forestry program.**

The proposed 38 percent cut to the national program would impact Wisconsin's funding allocation and may result in:

- eliminating pass-through grants entirely
- reducing core program services including education, technical assistance and assessment
- reducing state and local governments' ability to prepare for and respond to emerald ash borer, putting the state's 5.4 million urban ash at greater risk

In its role as a partner and advocate for the urban forestry community, the UF council has been active in its efforts to increase funding for urban forestry. Recent council member activity has included:

- visits with US Senate and House representatives' staff in Washington
- visits with Congressman David Obey's Wisconsin's staff
- distributing information regarding the federal budget cuts and their potential Wisconsin impacts—to municipalities and professional organizations that are involved and impacted by the urban forestry program
- submitting written testimony to the House Committee on Appropriations Subcommittee on Interior, Environment and Related Agencies regarding the federal cuts to the Urban & Community Forestry program
- submitting letters to Senator Kohl and Congressman Obey supporting DNR and DATCP requests for additional funding to address emerald ash borer

Photo: Ian Brown, WDNR

Ken Ottman, Council chair

- submitting letters to senators Feingold and Kohl in support of invasive species initiatives

These efforts combined with support from voices throughout the nation have produced some positive results. The House markup proposes a 3 percent increase versus the president's 38 percent cut in Urban & Commuity Forestry funding. While this is promising, there are more hurdles before this becomes reality. The proposed budget must pass the full House *plus* be introduced and accepted by the Senate.

I strongly urge you to contact your congressman and both US senators. Thank them for their previous support and share with them how the urban forestry grants and programs have impacted your community. Be specific about what your community has been able to accomplish through this program. If you have questions regarding how many grant dollars and total dollars have been awarded to your community, contact your regional urban forestry coordinator.

For quantifiable information on the value of urban and community forestry, see "Trees Pay Us Back" at http://na.fs.fed.us/urban/treespayusback/vol2/page7.html. Information is also available through the Alliance for Community Trees. Visit their policy section at http://actrees.org/site/whatwedo/policyalerts/index.php.

Our governmental process is the best in the world, but it only works if folks like you get involved and participate. Wisconsin is in a very special position with Senator Kohl serving on the Senate Appropriations Committee and Congressman David Obey serving as chair of the House Committee on Appropriations. Our representatives are in very influential positions. I encourage all who have a belief, passion and/or stake in the value and benefits that trees provide to join in. Let your voice be heard!

Contact information for your region:

If you are unsure who your congressman is, see http://waml.legis.state.wi.us/.

Senator Herb Kohl—http://kohl.senate.gov/gen_contact.html

Senator Russ Feingold—http://feingold.senate.gov/contact.html

Urban Forest Assessment, *continued from page 1*

because the various methods don't provide the same kind of management information, communities should determine how they plan to use the assessment before choosing a method. After determining their own goals for an assessment project, a community can more easily decide what type to conduct and how detailed the information needs to be. By answering this main question, the basic framework for the project is laid.

On-the-ground: This type of inventory can be done as a complete inventory or as a sample. Complete inventories are customary for community street and park trees. They identify what and where the trees are and their specific maintenance needs. Urban assessment projects that cross property boundaries to include trees on public and private property are usually based on sampling methodologies because a complete inventory would be cost and time prohibitive.

On-the-ground assessments typically yield individual tree data such as species, size, location and condition. These assessments can vary in the level of detail, ranging from a quick *windshield survey* to a more elaborate GPS assisted study. A windshield survey is conducted while slowly driving down community streets and documenting trees along the way. On the other end of the spectrum, a detailed walking survey using commercial inventory software typically integrates tree data in a way that enables individual trees to be tracked through time. Many inventory software programs can also initiate work requests for trees that are in poor condition or hazardous. This streamlines documentation and recordkeeping, resulting in more efficient management.

Another assessment option is i-Tree, a software suite developed by USDA Forest Service Research, State and Private Forestry, and other cooperators. It puts comprehensive assessment and analysis tools directly into the hands of the user. Included in the suite are data collection tools and tree effect/benefit models for street trees as well as all public and private trees in the community; see **www.itreetools.org/**. These tools, however, are designed to provide a snapshot assessment of the tree resource, they're not for conducting ongoing inventories.

Remote Sensing: Urban application of remote sensing technology is an up-and-coming trend. This method uses satellite imagery or aerial photographs to map the entire tree canopy within an urban area. The advantage to this method is that it comprehensively captures the entire urban tree canopy regardless of property ownership or accessibility. A disadvantage is that this technology generally does not yet allow for individual species identification. If tree managers are looking to locate the ash within their community, for example, remote sensing is probably not the best assessment method. There is, however, technology on the horizon called hyper-spectral imagery that would enable species identification from satellite imagery. At the moment, the technology is likely too expensive for individual community assessment.

A spring 2007 pilot study in the city of Middleton illustrated some of the powerful uses of current remote sensing capabilities. The project was a joint effort between the City of Middleton, Wisconsin DNR and NCDC Imaging and Mapping. High-resolution satellite imagery determined existing tree canopy, grass and impervious surfaces within the city. The relative composition of these components was also identified in different parts of the city (commercial vs. residential) to determine high-priority future planting areas. A complete CITYgreen analysis was also conducted. American Forests' CITYgreen software program uses GIS data from a canopy assessment to estimate the monetary benefits provided by urban trees related to storm water reduction, air pollution removal and carbon sequestration. The pilot project showed that Middleton receives hundreds of thousands of dollars worth of benefits annually from the urban forest. An hour-long informational Webcast outlining the project is available on the DNR Urban Forestry page at **http://dnr.wi.gov/org/land/forestry/UF/** in the News and Events section.

The Bottom Line

There are a number of methods for conducting urban forest inventories and assessments. The take-home message here is that any type of resource documentation is better than none for determining annual budgets, maintenance schedules and planning priorities. By documenting the essential nature of community trees, assessments help inform decision making. Maybe the next time someone asks the value of your community forest you can blow their socks off with some impressive numbers that illustrate the vital contribution of trees!

2008 Wisconsin Urban Forestry Grants

The Wisconsin Department of Natural Resources announces the availability of funds for 2008 urban and community forestry projects. Wisconsin cities, villages, towns, counties, tribal governments and 501(c)(3) nonprofit organizations are invited to apply for grants to support urban and community forestry projects completed in 2008. Grants range from $1000 to $25,000. Grant recipients must match the grant dollar-for-dollar.

The deadline for submitting a completed grant application is October 1, 2007. For more information, contact a DNR regional urban forestry coordinator. They are available to assist in project and application development. For additional information visit our Web site at **http://dnr.wi.gov/org/land/forestry/uf/grants/.**

Commuity Profile: City of Horicon, *continued from page 2*

other areas that had none and replacing mature street trees that had been removed. Working with the park board, she looked for areas where trees and shrubs could be planted to improve Horicon city parks. In 1982 Judy helped organize Horicon's first tree planting, consisting of 14 trees.

The spring tree planting became an annual event. Throughout the year Judy kept a notebook of possible planting locations. She researched what species would be appropriate for each location and discussed the selections with local nurseries. The funds to purchase trees came from the city and donations from local service clubs, businesses and residents. The planting volunteers included park and tree board members, city employees and officials, local service club members, students and Scouts.

Judy attended conferences and read books to continue educating herself about trees. She was named city forester in 1986, the year she wrote the following letter to the editor in the *Horicon Reporter:*

April 1, 1986

Letter to the Editor:

Have you noticed? Does anyone miss them? One by one up and down the streets of Horicon we're losing our mature trees. What are we losing? Should we be concerned? Those trees have cooled our city on a hot summer's day, softened the glare of the sun on the streets and sidewalks, attracted birds and wildlife, filtered the dust and pollution from the air, reduced the noise from the street, and provided us with beautiful color and texture. We're losing something that makes Horicon a more pleasant place to live.

Why not take some steps now to replace these trees. Trees can be planted in the terrace area between the sidewalk and curb with a permit from the city. Good trees planted in the right spot won't cause the problems often associated with street trees. For this reason guidelines have been set up for planting and choosing the proper tree. You are encouraged to call city hall if you are interested in planting a street tree and someone will help you mark a planting spot and recommend a good species of tree.

Judy Zirbel
Horicon Park Board

At this same time, Judy became aware of the Tree City USA program. She prepared the application and in 1987 Horicon received its first Tree City USA award. The award became a feature at Horicon's annual Arbor Day ceremony; in 2007 Horicon received its 20th consecutive Tree City award. At this year's ceremony, Jeff Roe, DNR Regional Urban Forestry Coordinator, South Central Region, said, "This makes Horicon the longest-running Tree City in my 11-county area and in the top one percent in the state."

When the city tree board was established in 1994, Judy was elected chairman. A review of tree board meeting minutes showed she rarely missed a meeting. This changed in early 2006 when she was diagnosed with cancer. The disease progressed quickly and she died July 3rd, 2006, two days before her 65th birthday. The cover of the funeral service bulletin featured a drawing by her daughter Susan of one of her favorite oak trees.

Judy's interest in trees was viewed through the lens of how they could enrich the lives of people. In a 1992 letter to the mayor and city council, she advocated for increased attention to green areas and trees in new construction projects. She said, *"People who watch the birds build nests in spring, park their cars under a shade tree in July, or enjoy the colors of autumn will appreciate your foresight in planning green areas in our city."*

Judy enjoyed working with the other board members, city public works employees and volunteer tree planters. Other people shared her vision that planting trees could make Horicon a more pleasant place to live and they pitched in to help. It was fitting that many of those people, including Tree Board Chairman Ted Pyrek and Horicon Public Works Supervisor Steve Bogenschneider, were present at the dedication of the Judy Zirbel Memorial in Bowling Green Park this Arbor Day. Along the banks of the Rock River, they planted a swamp white oak, Judy's favorite tree.

Tree board member and DPW employee Buzz Vanderhei spoke at the dedication,

"By the year 2006 Judy had made a direct impact on every park or street tree planted in Horicon. She had hand picked the trees and the spots for almost every street and park tree in the city—as of 2007, 1156 to be exact—quite an accomplishment. Thanks to Judy, this year, 2007, Horicon is receiving its 20th consecutive Tree City Award… so on a hot summer's day, when you walk down a shaded city walk, remember one person can make a difference."

For breaking urban forestry news and announcements—

…subscribe to The Urban Forestry Insider at:
http://www.dnr.state.wi.us/org/land/forestry/UF/Resources/InsiderArchive.html#subscribe.

The Idea Exchange…

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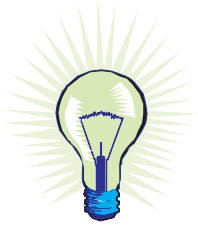

Does your community or organization have an idea, project or information that may be beneficial to others? Please let your regional urban forestry coordinator know. We will print as many of these as we can. If you see ideas you like here, give the contact person a call. They may be able to help you in your urban forestry efforts.

compiled by Olivia Witthun, Urban Forestry Assistant DNR Northeast Region

Arbor Day Tree Sale and Brat Fry

The Boys & Girls Club of Berlin held their fifth annual Arbor Day Tree Sale and Brat Fry on Saturday, April 28, 2007. Thousands of two- to four-foot bare-root trees and shrubs were sold for just a few dollars each. Orders were taken ahead of time to help gauge demand. Over 20 species were available, each well suited to the climate and supplied by a local nursery. A brat fry, appealing to Wisconsin palates, made this event even more remarkable. A master gardener was on hand to answer tree questions and WAUH Radio broadcasted live from the event. This capstone event highlights a great partnership between local companies, nonprofits, the community and many others. The successful fundraiser will benefit the Boys & Girls Club of Berlin by helping with operational costs and additional programs for club members of all ages. Info: **www.bgcaberlin.org/?201902001005**.

4-H Clubs Inventory Trees

The national 4–H program's GIS GPS Leadership Team promotes leadership through the use of GIS and related technologies. Hillsboro, Oregon, utilized this program to conduct a street tree inventory. The 4–H'ers, their technology coordinator and the city planner trained over 400 volunteers to gather data. The youth and volunteers used ArcPad software to catalog the type, condition, size and location of approximately 12,000 street trees in Hillsboro. At the end of each day, the field data were loaded into the city's GIS system. After the data were collected, 4–H members and the city planner created easy-to-read ArcView maps. The maps assist with maintenance, planting, estimating future budget needs and helping the city qualify for Tree City USA. The project was funded by a $5000 Oregon Department of Forestry grant and help from several community sponsors. This partnership gave 4–H'ers hands-on experience with geospatial technology and the city gained a street tree inventory for developing a management plan. Info: **www.esri.com/news/arcnews/winter0506articles/4h-clubs.html**.

Basswood Benefits Woodcarvers and Community

When the City of Menomonie needed to remove a 120-year-old basswood tree from a prominent local park, they wanted to find a good use for the wood. The city generally makes its wood waste available to the public for firewood, but basswood doesn't burn very well. As an alternative, the park supervisor contacted a local woodcarver who was very interested in the wood. This woodcarver contacted others in his network and they all obtained basswood from the tree. The wood from the park tree will be crafted into birds, animals and other creations and then raffled off, with proceeds going to local charities and community programs. After giving all through its life, this tree will keep on giving even after its removal. Info: **www.dunnconnect.com/articles/2007/03/05/variety/variety04.txt**.

Research Notes:

Below-Grade Planting Adversely Affects Survival and Growth of Tree Species from Five Different Families

by Michael A. Arnold[1], Garry V. McDonald[2], Donita L. Bryan[3], Geoffrey C. Denny[4], W. Todd Watson[5] and Leonardo Lombardini[6]

A study was completed through Texas A&M University to gauge the impact of planting depth on five different species from five different families of container grown trees. Adverse effects were demonstrated when root collars were located as little as 7.6 cm (3 in.) below grade on all taxa tested, but the severity of the responses varied among taxa.

These responses were confirmed for both seed-propagated species, *Fraxinus pennsylvanica* Marsh. (green ash, family Oleaceae Hoffmansegg & Link) and *Platanus occidentalis* L. (sycamore, family Platanaceae Dumort.) as well as cutting-propagated taxa, *Lagerstroemia indica* L. x *Lagerstroemia fauriei* Koehne. 'Basham's Party Pink' (crapemyrtle, family Lythraceae St.-Hilaire), *Nerium oleander* L. 'Cranberry Cooler' (oleander, family Apocynaceae Juss.), and *Vitex agnus-castus* L. 'LeCompte' (vitex, family Verbenaceae St.-Hilaire).

In some cases, planting above grade by 7.6 cm (3in.) improved growth of plants over that of those planted either at or below grade. This effect was pronounced with sycamore and oleander.

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[4] *PhD student,Department of Horticultural Sciences*
[5] *Assistant Professor, Department of Forest Sciences*
[6] *Assistant Professor, Department of Horticultural Sciences*
Texas A&M University, College Station, TX

Reference: *Arboriculture & Urban Forestry,* Vol.33, No.1, Pages 64–69. January 2007.

Urban Forestry Resources:

Tree Inventory and Management Software

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compiled by Jill Johnson, Coordinator
Midwest Center for Urban & Community Forestry

*Commercial Inventory Software Programs**

Revised May 2007

ArborAccess®
West Coast Arborists
www.wcainc.com/template/arboraccess.asp
800-521-3714

ArborPro®
ArborPro Inc.
PO Box 4096
Newport Beach, CA 92661-4096
www.arborprousa.com
877-844-DATA
mail to: info@arborprousa.com

ArborSoftWorx®
Creative Automation Solutions, Inc.
www.arborsoftworx.com/municipal.htm
800-49-ARBOR (2-7267)
mail to: Sales@ArborSoftWorx.com

Canopy®
ArborVision Software
3009 N Lake Terrace
Glenview, IL 60026
www.arborvision.com
847-663-9787
mail to: info@canopy-worldwide.com

StrataPoint®
Stratapoint Inc.
14802 Delmar Court
Rosemount, MN 55068
www.stratapointinc.com/tree_1.html
mail to: info@stratapointinc.com
651-322-4000

Tree Management & Maintenance Solutions
Government Management Solutions
24139 Del Monte Drive, Box 267
Valencia, CA 91355
http://govmanage.com/trees.html
818-355-0450
mail to: HandHelds@GovManage.com

TreeKeeper®
Davey Resource Group
www.treekeeperonline.com/treekeeper.shtm
800-828-8312 x43
mail to: tk7sales@davey.com

TreePro®
Gray Hill Solutions
1100 NE 45th Street, Suite 210
Seattle, WA 98105 USA
www.treeproworld.com/index.htm

Trees in the Hood®
Natural Path Urban Forestry Consultants
www.naturalpathforestry.com/
773-699-7284
mail to: natpath@earthlink.net

TreeSavvy®
Savvy Inventory Systems, LLC
2489 Rice Street, Suite 160
Roseville, MN 55113
www.treesavvy.com
763-753-5505
mail to: info@treesavvy.com

TreeWorks®
The Kenerson Group
2342 Main Street
Athol, MA 01331
www.kenersongroup.com/treeworks.asp
978-249-6495
mail to: info@kenersongroup.com

TRIMS Tree Inventory
TRIMS
PO Box 567
Peoria, AZ 85380-0567
www.trims.com/mindex.htm
800-608-7467
mail to: info@trims.com

UFIS
Natural Resource Technologies, LLC
PO Box 780603
Tallassee, AL 36078
www.nrtech.com/f_ufis..htm
888-848-2146
mail to: info@nrtech.com

Freeware and Public Domain Software

Community and Urban Forest Inventory and Management Program
www.ufei.org

i-Tree Software Suite
www.itreetools.org
- UFORE: ecosystem composition and benefits
- STRATUM: street tree composition, costs, benefits
- MCTI: basic tree inventory
- sample generator

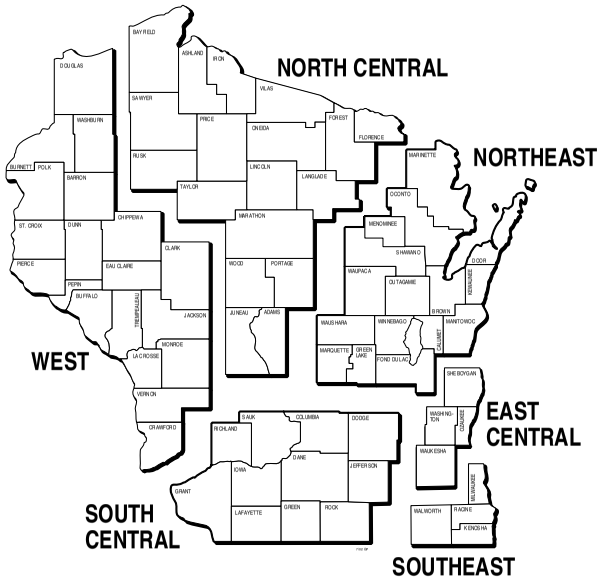
Public Domain Templates for ArcPad
http://arcscripts.esri.com/

Cornell University Tree Inventory
www.hort.cornell.edu/commfor/inventory/download.html

Open Source Tree Mapping Software
www.urbanforestmap.org

*NOTE: Commercial software programs listed here were identified through Web searches. Any omissions from this list are unintentional. Please contact Jill Johnson at jilljohnson@fs.fed.us to be added to the list.

Wisconsin DNR Urban and Community Forestry Contacts



World Wide Web Site: http://dnr.wi.gov/org/land/forestry/uf/

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